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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
Before the Board of Patent Appeals and Interferences**

In re application of: ESTHER WESSELS, ET AL.

Application No.: 10/025,684

Confirmation No.: 6038

Group No.: 1711

Filed: December 26, 2001

Examiner: Rajguru, Umakant K.

Title: LASER-WRITABLE POLYMER COMPOSITION

March 25, 2004

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Commissioner for Patents  
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**APPELLANT'S REPLY BRIEF**

**I. INTRODUCTION**

This Reply Brief responds to the Examiner's Answer dated February 3, 2004.

**A. Updated Statement of Related Appeals and Interferences**

As a matter of formality, and contrary to item (2) **Related Appeals and Interferences**, of the Answer, the brief did state "none" to the question whether there are other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal.

B. The Status of the Claims

Claims 1-11 and 23-28 are pending. Claim 12 has been withdrawn from consideration, but not canceled. Claims 13-22 have been canceled. Claims 1-11 and 23-28 stand rejected, and are on appeal

II. **REPLY**

With respect to the substantive “**Response to Argument**” Appellant submits that the Final Rejection should not be sustained for the reasons set forth in the main brief and for the following additional reasons.

It is urged by the Examiner (bottom of page 4) that Andes’ suggestion to use the pigments for laser-making (sic) “should surely serve as an appropriate direction to a person of ordinary skill in the art to use the pigment in a laser-making (sic) composition with the possibility that one can obtain better product/s using such pigment/s.” (Emphasis added.)

The mere “possibility” that a result may occur is not a reasonable basis for modifying prior art in an obviousness rejection. Nor is the issue whether or not using the pigment of Andes for laser-marking would result in a “better” product. Rather, the question to be addressed is whether the disclosure of Andes provides any motivation to modify the composition of JP ‘219 and, if so, would the practitioner have a reasonable expectation of success by so doing.

In response to this inquiry, it is respectfully submitted that there is neither motivation nor a reasonable expectation of success.

While Andes states that the invention provides for the use of the pigments “for the laser marking of polymeric materials and papers” (col. 2, lines 45-46) there is no further description of laser marking polymer compositions or how such compositions should be

used. At the next statement of potential uses for the pigments, there is no mention of laser marking (see col. 6, lines 4-6). For example, Andes provides no disclosure that the polymer compositions should or could be used with YAG laser light with wavelength 1.06  $\mu\text{m}$ , which is a critical feature of the laser-marking compositions of JP 291. At most, therefore, the disclosure by Andes of a possible use of the pearl luster pigments for laser marking is merely an invitation to experiment but does not provide any guidelines for assisting the practitioner in selecting any particular polymer materials<sup>1</sup>, additives, amounts, particle sizes, laser sources, or any of the other parameters for a successful laser marking composition.

Moreover, notwithstanding the relative or qualitative nature of “light” and “dark” which the Examiner discusses on page 5, first paragraph, it is respectfully submitted that adding a “dark” pigment to a “dark” composition would not be expected to result in a “light” composition.

The Examiner’s assertion on page 5, second paragraph, that a carbon black based composition containing only 0.1% by weight of carbon black can never be black like tar or coal and is likely to be pale grey in color is contrary to the express characterization in paragraph [0008] of the English translation of JP 291 which refers to black color and advises against using carbon blacks of average particle diameters and/or specific surface areas which would result in “ash white” appearance or “mottling condition” or other than the desired dark (black) color. Further, it is also explained in paragraph [0008] that using too much carbon black results in a black printing, which is also undesirable.

Therefore, there is no doubt that the person of ordinary skill in the art would understand the disclosure of JP 291 to be of a laser-marking composition which is of a color which is darker than the color of the printed matter formed following exposure to laser light. The practitioner would further understand that the formation of the light (e.g., white) colored markings following exposure is the result of the evaporation of the carbon black.

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<sup>1</sup> The disclosure of JP 291 is limited to epoxy resin with phenolic curing agent.

That is, the operation of the laser-marking composition of JP 291, is that exposure to laser irradiation causes the carbon black component of a dark composition to be evaporated, thereby converting the composition, where exposed, to a white color, *i.e.*, a light color marking on a dark background (see, *e.g.*, paragraph [0007] of JP 291).

With this understanding, it is Appellant's position that the practitioner would not have been motivated to add to the JP 291 composition a relatively dark pigment, such as the pearl luster pigments disclosed by Andes<sup>2</sup>. Doing so would, at a minimum, result in a dark green, grey-green or grey-blue background. Therefore, exposure of the composition to YAG laser light would no longer result in the intended white markings on the dark background. In fact, this tendency should be exacerbated in the case where the minimum 0.1 wt% carbon black is present in the composition because in such case the effect of adding the dark pearl luster pigment of Andes would be expected to have the greatest effect on the color of the composition and therefore the background remaining outside the exposed areas.

The assertion that in the embodiment of the invention wherein the amount of the nacreous pigment is at least 0.1% by weight (*e.g.*, claim 23) would have been obvious in view of the disclosure in JP '291 that the amount of carbon black is in the range of 0.1 to 1.0% by weight is also not supportable. It is respectfully submitted that it is not only merely hindsight to equate the pearl luster pigment of Andes with the carbon black of JP 291 but, there is no evidentiary basis for asserting that the range of amounts of carbon black would have any relationship to the amount of another and materially different, *e.g.*, pearl luster, pigment. Carbon black is not disclosed in JP 291 as merely one of any suitable and interchangeable pigment but it is a special type of carbon black (*e.g.*, average particle size, surface area) having a special relationship with YAG laser light of 1.06  $\mu\text{m}$  wavelength. Therefore, the disclosure of the amount of carbon black in JP 291 does not suggest an equivalent, or any, amount of a pearl luster pigment.

With regard to the embodiment of the invention set forth in claims 24 and 25, both reciting a contrast value of at least 1.5, the Examiner's position in the paragraph

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<sup>2</sup> The pigments are dark green or grey-green or grey-blue.

bridging page 5 and 6, improperly urges that this limitation is inherently satisfied because the composition contains the claimed ingredients in the same, similar or overlapping amounts. This is, of course, an unsupported conclusion.

As explained in the main brief, the contrast value is indicative of a dark marking on a light background. In contrast, the compositions of JP 291 provide a dark background on which light (e.g., white) markings are formed by exposure to YAG laser light. Adding a dark, pearl luster pigment with strong hiding power should decrease the contrast value between the markings and background, if not totally obscuring the intended white markings.

Accordingly, for the reasons set forth in the main brief, as further explained in this Reply, it is asserted that the prior art does not support an obviousness rejection of claims 1-11 and 23-28 of the subject application.

Therefore, Appellant again requests that the Honorable Board of Patent Appeals and Interferences reverse the decision of the Primary Examiner, and not sustain the rejection of claims 1-11 and 23-28.

Appellants now appeal to this Honorable Board to promptly reverse these rejections and issue a decision in favor of Appellants. All of the claims are in condition for allowance.

Respectfully submitted,

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## CLAIMS

1. A laser markable polymer composition of light color comprising:
  - a) a polymer
  - b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles having an average particle size above 0.5 micrometer ; and
  - c) a nacreous pigment.
2. Polymer composition according to claim 1, characterized in that the antimony trioxide has a particle size between 1 and 8 micrometer.
3. Polymer composition according to claim 2, characterized in that the amount is between 0.5 and 5 wt.%.
4. Polymer composition according to claim 1, wherein the polymer composition is free of halogen-flame retardant.
5. Polymer composition according to claim 1, comprising between 2 and 5 wt. % antimony trioxide with an average particle size of at least 1.5 micrometers.
6. Polymer composition according to claim 1 containing from 0.1 to 5 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.
7. Polymer composition according to claim 1, containing between 0.5 and 3 wt. % antimony trioxide and between 0.1 and 3 wt. % nacreous pigment.
8. Polymer composition according to claim 1, wherein the weight ratio of the nacreous pigment and the antimony trioxide lies between 1:5.5 and 1:50.

9. Polymer composition according to claim 1, wherein the polymer composition contains a halogen-free flame retardant.

10. Polymer composition according to claim 9, characterized in that it contains melamine cyanurate as the halogen-free flame retardant.

11. Article, wholly or partly made of the polymer composition according to claim 1.

12. Process for applying a dark laser marking onto a light background, in which an article consisting, at least at the place where the marking is applied, of a polymer composition containing a polymer and at least 0.1 wt.%, relative to the total weight of the polymer composition, of antimony trioxide having an average particle size above 0.5 micrometer, is irradiated with laser light in the pattern of the marking.

23. Polymer composition according to claim 1 containing from 0.5 to 10 wt % antimony trioxide and at least 0.1 wt.% of a nacreous pigment.

24. The composition of claim 1 wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

25. A light colored laser markable polymer composition comprising:

- a) polymer
- b) from 0.1 to 10 wt %, relative to the total weight of the polymer composition, of antimony trioxide particles with an average particle size above 0.5 micrometer; and
- c) at least 0.3 wt % of a nacreous pigment,

wherein when exposed to laser light the composition forms a mark with a contrast value of at least 1.5.

26. Polymer composition of claim 25 wherein the antimony trioxide particles have a particle size between 1 and 8 micrometers.

27. Polymer composition according to claim 25, wherein the polymer composition is free of halogen-flame retardant.

28. Polymer composition according to claim 25 containing from 0.1 to 5 wt % antimony trioxide and at least 0.4 wt.% of a nacreous pigment.